

# LOW LOSS MULTIPLE OUTPUT STAGE FOR A DC-TO-DC CONVERTER

## ABSTRACT OF THE DISCLOSURE

5        A low loss multiple output stage of a boost converter includes a first output transistor having a first on-resistance, a second output transistor having a second on-resistance, a sink transistor, and a gate logic module. The sink transistor is operably coupled to allow energy to be provided to a first output via the first output transistor or to allow the energy to be provided to a second output via the gate logic module and the  
10   second output transistor based on a regulation signal. The gate logic module is operably coupled to, when the energy is to be provided to the first output, couple a gate and a well of the second output transistor to the first output; when the sink transistor is active, couple the gate and the well of the second output transistor to the second output, and  
15   when the energy is to be provided to the second output, couple the gate of the second transistor to ground and the well of the second output transistor to the second output. As such, a smaller transistor may be used as the load transistor for the lower output voltage without being compromised by the larger output voltage.